

## GILA RIVER BASIN

### 09508500 VERDE RIVER BELOW TANGLE CREEK, ABOVE HORSESHOE DAM, AZ

**LOCATION**--Lat 34° 04'23", long 111° 42'56", in sec. 35, T.9 N., R.6 E. (unsurveyed), Yavapai County, Hydrologic Unit 15060203, in Tonto National Forest, on right bank 1.3 mi downstream from Tangle Creek and 9 mi upstream from Horseshoe Dam.

**DRAINAGE AREA**--5,858 mi<sup>2</sup>, of which 365 mi<sup>2</sup> is noncontributing, including 357 mi<sup>2</sup> in Aubrey Valley Playa, a closed basin.

### WATER-DISCHARGE RECORDS

**PERIOD OF RECORD**--Aug. 1945 to current year.

**REVISED RECORDS**--WDR AZ-89-1: Drainage area.

**GAGE**--Water-stage recorder. Datum of gage is 2,029.0 ft above sea level.

**REMARKS**--No estimated daily discharges. Records good. About 12,500 acres above station are irrigated by surface water and ground water. Low flow slightly regulated by powerplant 32 mi above station, using water from Fossil Creek. This station is above all major reservoirs on Verde River.

**EXTREMES FOR PERIOD OF RECORD**--Maximum discharge, 145,000 ft<sup>3</sup>/s Jan. 8, 1993, gage height 23.4 ft, from slope-area measurement of peak flow; minimum, 48 ft<sup>3</sup>/s June 17, 1956, July 18 and 19, 1958, caused by power regulation on Fossil Creek; minimum daily, 58 ft<sup>3</sup>/s Aug. 15 and 18, 2002.

**EXTREMES OUTSIDE PERIOD OF RECORD**--Maximum discharge since at least 1888, 150,000 ft<sup>3</sup>/s Feb. 24, 1891, based on comparison with peak discharge at other stations on Verde River.

**EXTREMES FOR CURRENT YEAR**--:

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Sept. 11 .....	2245	2,850	9.35

Minimum daily discharge, 58 ft<sup>3</sup>/s Aug. 15 and 18.

### DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	110	178	221	259	235	197	187	154	92	67	69	71
2	124	189	222	256	235	196	190	151	85	66	65	73
3	124	191	224	254	238	192	179	144	82	70	67	72
4	128	190	241	253	240	198	166	140	80	66	72	71
5	139	187	263	252	247	204	160	143	79	67	74	66
6	142	187	254	250	257	204	163	142	80	67	83	65
7	146	196	251	249	254	206	180	144	82	66	99	90
8	177	198	246	250	255	213	191	136	82	65	107	578
9	264	198	242	250	252	208	208	131	79	63	104	920
10	280	201	242	248	249	202	208	124	79	65	96	724
11	242	199	247	247	249	204	204	118	81	63	87	1210
12	211	199	251	246	250	205	195	109	81	77	81	1380
13	201	202	252	248	249	187	183	118	81	77	76	765
14	198	202	252	249	252	184	170	135	82	80	70	507
15	200	205	252	249	243	188	156	124	80	102	58	368
16	194	206	255	247	237	193	151	112	76	177	61	305
17	186	209	256	245	231	192	144	107	76	103	63	275
18	187	210	257	243	227	198	143	103	78	91	58	247
19	185	205	254	242	224	211	147	98	76	97	64	224
20	184	203	255	240	225	215	142	95	70	94	65	202
21	175	208	256	238	220	208	140	92	71	93	65	182
22	175	212	256	240	212	198	140	88	68	91	64	171
23	173	209	254	239	208	188	138	95	67	80	63	161
24	172	211	253	238	204	178	132	98	65	83	63	153
25	169	216	252	234	199	174	134	96	65	89	60	146
26	166	217	251	230	190	174	134	99	65	92	64	140
27	166	214	252	227	183	169	132	103	66	82	66	131
28	176	212	252	225	187	167	133	100	70	85	69	129
29	176	216	252	225	---	172	143	97	69	80	69	132
30	177	218	253	228	---	176	152	96	69	84	71	137
31	171	---	256	231	---	183	---	94	---	79	73	---
TOTAL	5518	6088	7724	7532	6452	5984	4845	3586	2276	2561	2246	9695
MEAN	178.0	202.9	249.2	243.0	230.4	193.0	161.5	115.7	75.87	82.61	72.45	323.2
MAX	280	218	263	259	257	215	208	154	92	177	107	1380
MIN	110	178	221	225	183	167	132	88	65	63	58	65
MED	176	204	252	246	236	196	154	109	79	80	69	166
AC-FT	10940	12080	15320	14940	12800	11870	9610	7110	4510	5080	4450	19230
CFSM	0.03	0.04	0.05	0.04	0.04	0.04	0.03	0.02	0.01	0.02	0.01	0.06

### STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

MEAN	323.2	359.9	703.7	822.4	1164	1497	840.2	211.3	132.0	175.9	318.3	277.9
MAX	4194	1384	4644	12420	11020	10420	5638	1322	316	430	1184	1463
(WY)	1973	1966	1979	1993	1980	1978	1973	1973	1955	1953	1951	1970
MIN	155	192	227	224	220	193	155	113	75.9	75.5	72.5	98.5
(WY)	1951	1963	1951	1961	1964	2002	1963	2000	2002	1958	2002	1956

### SUMMARY STATISTICS

#### FOR 2001 CALENDAR YEAR

#### FOR 2002 WATER YEAR

#### WATER YEARS 1946 - 2002

ANNUAL TOTAL	115680	64507	
ANNUAL MEAN	316.9	176.7	566.2
HIGHEST ANNUAL MEAN			2229
LOWEST ANNUAL MEAN			177
HIGHEST DAILY MEAN	2950	Mar 15	1380
LOWEST DAILY MEAN	74	Jun 15	58
ANNUAL SEVEN-DAY MINIMUM	77	Jun 15	62
ANNUAL RUNOFF (AC-FT)	229500	127900	410200
ANNUAL RUNOFF (CFSM)	0.058	0.032	0.10
10 PERCENT EXCEEDS	628	252	870
50 PERCENT EXCEEDS	211	177	238
90 PERCENT EXCEEDS	97	69	120

## GILA RIVER BASIN

## 09508500 VERDE RIVER BELOW TANGLE CREEK ABOVE HORSESHOE DAM, AZ—CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Oct. 1980 to current year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	TUR-BID-ITY (NTU) (00076)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-AIRE (DEG C) (00020)	TEMPER-AIRE WATER (DEG C) (00010)	HARD-NESS NONCARB DISSOLV FLD. AS CAC03 (MG/L) (00904)	HARD-NESS TOTAL (MG/L AS CAC03) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
DEC 18...	1415	247	1.2	709	11.4	104	8.5	642	20.5	8.0	5	260	48.0
APR 03...	1220	179	20	705	8.9	103	8.4	675	30.5	18.4	10	260	45.0
JUN 13...	1340	80	19	704	8.0	106	8.4	772	36.5	25.4	15	270	43.0
AUG 09...	1110	108	25	707	7.1	96	8.4	796	40.0	26.7	15	290	46.0
Date	CALCIUM TOTAL RECOV-ERABLE (MG/L AS CA) (00916)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	MAGNE-SIUM, TOTAL RECOV-ERABLE (MG/L AS MG) (00927)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT TOT IT FIELD (MG/L AS CAC03) (39086)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SULFATE SOLVED (MG/L AS SO4) (00945)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)
DEC 18...	51.0	34.0	34.0	2.40	.9	35.0	255	287	12	24.0	.3	58.0	<1c1
APR 03...	49.0	36.0	37.0	2.70	1	43.0	250	295	5	27.0	.3	76.0	30
JUN 13...	47.0	39.0	40.0	3.40	1	56.0	252	284	12	38.0	.4	100	25
AUG 09...	51.0	42.0	41.0	3.80	2	63.0	258	308	12	40.0	.4	110	37
Date	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	E COLI, MTEC MF (COL/ 100 ML) (31633)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)
DEC 18...	.48	E316c1	355	<.20	.01	.01	<.020	--	<.02	7	<1k	<1k	<1
APR 03...	.54	398	380	<.20	.02	.03	<.020	--	<.02	<5	E10k	E6k	<1
JUN 13...	.61	450	432	<.20	.02	.03	<.020	--	.02	<5	E3k	E6k	<1
AUG 09...	.66	488	469	.70	.02	.03	<.020	.68	.06	<5	E8k	--	<1
Date	ANTI-MONY, TOTAL (UG/L AS SB) (01097)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	BORON, DIS-SOLVED (UG/L AS B) (01020)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)
DEC 18...	<1	18	18	90.0	93.0	<1	<1	159	160	<.5	<.5	<1	<1
APR 03...	<1	20	22	80.0	95.0	<1	<1	190	197	<.5	<.5	<1	1
JUN 13...	<1	22	26	72.0	83.0	<1	<1	251	255	<.5	<.5	<1	1
AUG 09...	<1	23	25	77.0	90.0	<1	<1	254	261	<.5	<.5	<1	1

## 09508500 VERDE RIVER BELOW TANGLE CREEK ABOVE HORSESHOE DAM, AZ—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)
DEC 18...	<2	<2	<2	80	<2	<2	3	6	<.10	<.1	<1	<1	<1
APR 03...	<2	<2	<2	801	<2	<2	7	33	<.10	<.1	<1	3	1
JUN 13...	<2	<2	<2	534	<2	<2	7	26	<.10	<.1	<1	2	<1
AUG 09...	<2	<2	<2	842	<2	<2	6	36	<.10	<.1	<1	3	<1
Date	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	STRON- TIUM, TOTAL RECOV- ERABLE (UG/L AS SR) (01082)	THAL- LIUM, DIS- SOLVED (UG/L AS TL) (01057)	THAL- LIUM, TOTAL SOLVED (UG/L AS TL) (01059)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)			
DEC 18...	<1	<1	<1	720	<2	<2	5	<2	3.0	2.0			
APR 03...	1	<1	<1	900	<2	<2	7	4	44	21.3			
JUN 13...	<1	<1	<1	940	<2	<2	4	2	62	13.4			
AUG 09...	<1	<1	<1	1020	<2	<2	6	6	37	10.8			

Remark codes used in this report:

&lt; -- Less than

E -- Estimated value

Value qualifier codes used in this report:

c -- See laboratory comment

k -- Counts outside acceptable range

l -- Sample lab preparation problem

## 09508500 VERDE RIVER BELOW TANGLE CREEK ABOVE HORSESHOE DAM, AZ—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Water-quality measurements in the following table were made as part of the ADEQ Fixed-Station Network Program. The following analyses are quality-assurance samples processed during the 2002 sampling period and are defined in the introductory text section titled "Water-Quality Control Data".

Date	Time	Sample type	PH WATER WHOLE FIELD (STANDARD ARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	ALUMINUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)
JUN 13...	1345	2	6.2	1	.04	<.03	< .1	< .20	< .01	< .020	< .02	<3	< .5
Date	BERYLLIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)				
JUN 13...	<1	< .5	<1	<2	<2	<2	<1	<1	4				
Remark codes used in this report:													
< -- Less than													